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a. REPORT UU	b. ABSTRACT UU	c. THIS PAGE UU			19b. TELEPHONE NUMBER 314-935-7888

**RPPR Final Report**  
as of 25-Feb-2019

Agency Code:

Proposal Number: 73045LSCF

**Agreement Number: W911NF-18-1-0096**

**INVESTIGATOR(S):**

**Name:** Ph.D Petra Anne Levin

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**Phone Number:** 3149357888

**Principal:** Y

Organization: **Gordon Research Conferences, Inc.**

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Country: USA

DUNS Number: 075712877

EIN: 050300482

**Report Date:** 13-Nov-2018

Date Received: 12-Sep-2018

**Final Report** for Period Beginning 14-Apr-2018 and Ending 13-Aug-2018

**Title:** 2018 Microbial Stress Response Gordon Research Conference and Seminar

**Begin Performance Period:** 14-Apr-2018

**End Performance Period:** 13-Aug-2018

**Report Term:** 0-Other

Submitted By: Nancy Ryan Gray

Email: grants@grc.org

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**Distribution Statement:** 1-Approved for public release; distribution is unlimited.

**STEM Degrees:** 0

**STEM Participants:** 0

**Major Goals:** Rapid and robust adaptive responses are essential for life in harsh environments. In bacteria, the global regulatory circuits that coordinate metabolic flux with growth, cell envelope composition, and cell cycle progression are essential to ensure the efficient partitioning of limited resources, maximize proliferative potential, and preserve viability in response to frequently changing conditions. These critical regulatory networks are the bacterial equivalent of an Achilles' heel, as defects in these systems render bacteria unable to adapt to changes in temperature, nutrient availability, osmotic and oxidative stress, and challenges presented by antibiotics, other microbes, and host immune systems.

The GRC Microbial Stress Response meeting brought together a diverse group of investigators to explore how bacteria respond to abiotic and host-associated stress. Emphasis was placed on new approaches to understanding interactions between microbes and the environment, particularly modern imaging, genetic, metagenomic, and computational strategies for understanding bacterial physiology and community structures under conditions of stress and competition. Attendees were encouraged to present posters of their most exciting research. Approximately 20% of oral presentations were selected from the submitted abstracts with an emphasis on those by new investigators, postdoctoral scientists and graduate students.

**Accomplishments:** Report Uploaded

**Training Opportunities:** Speakers, discussion leaders, poster presenters and attendees simultaneously contributed to and benefited from the collective skills and experience shared throughout the conference.

**Results Dissemination:** The complete final program is posted on the GRC website.

**Honors and Awards:** Nothing to Report

**Protocol Activity Status:**

**Technology Transfer:** Nothing to Report

**RPPR Final Report**  
as of 25-Feb-2019



## GORDON RESEARCH CONFERENCES

### FINAL PROGRESS REPORT

Army Research Office  
Microbial Stress Response GRC/GRS

Grant Number W911NF-18-1-0096

July 14-20, 2018

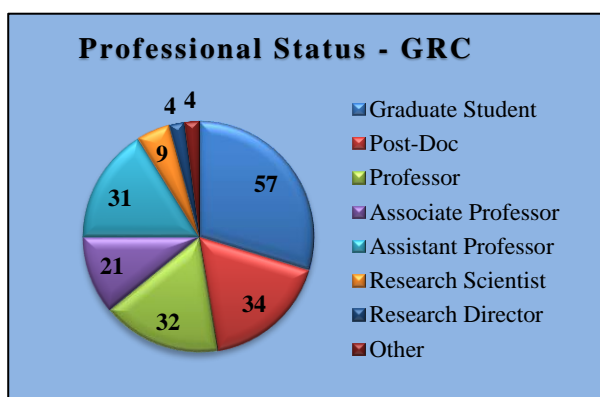
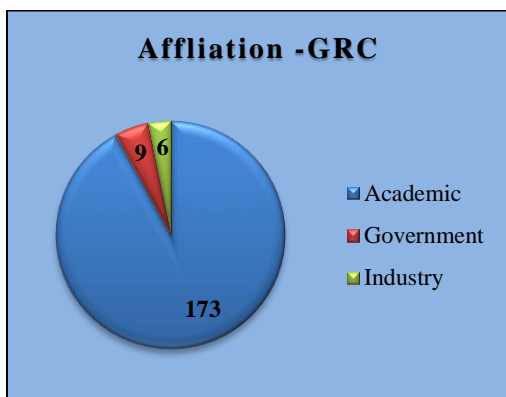
#### Operational Summary

The Gordon Research Conference (GRC) and Gordon Research Seminar (GRS) on Microbial Stress Response were held at Mount Holyoke College in South Hadley, Massachusetts from July 14-20, 2018. The meeting covered a variety of scientific topics and the content presented was highly rated by participants.



#### Conference Participants

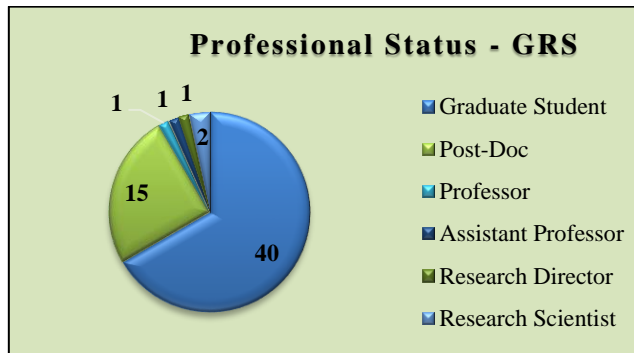
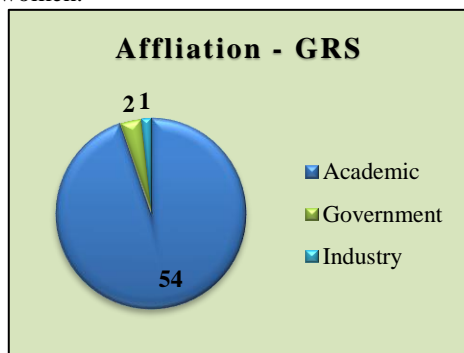
The Conference was well-attended with 192 participants. Scientists from academia represented 90% of the participants while attendees from government accounted for 5% and those from industry totaled 3%. The meeting also attracted a strong mix of young investigators and senior scientists. Students and post-docs accounted for 48% of all attendees. Approximately 54% of the participants at the 2018 meeting were women.



Gordon Research Seminars

#### Seminar Participants

The Conference was well-attended with 60 participants. Scientists from academia represented 90% of the participants while attendees from government accounted for 3% and those from industry totaled 2%. Students and post docs combined accounted for 92% of all attendees. Approximately 65% of the participants at the 2018 seminar were women.



#### Conference Program

Rapid and robust adaptive responses are essential for life in harsh environments. In bacteria, the global regulatory circuits that coordinate metabolic flux with growth, cell envelope composition, and cell cycle progression are essential to ensure the efficient partitioning of limited resources, maximize proliferative potential, and preserve viability in response to frequently changing conditions. These critical regulatory networks are the bacterial

equivalent of an Achilles' heel, as defects in these systems render bacteria unable to adapt to changes in temperature, nutrient availability, osmotic and oxidative stress, and challenges presented by antibiotics, other microbes, and host immune systems.

The GRC Microbial Stress Response meeting brought together a diverse group of investigators to explore how bacteria respond to abiotic and host-associated stress. Emphasis was placed on new approaches to understanding interactions between microbes and the environment, particularly modern imaging, genetic, metagenomic, and computational strategies for understanding bacterial physiology and community structures under conditions of stress and competition. Attendees were encouraged to present posters of their most exciting research. Approximately 20% of oral presentations were selected from the submitted abstracts with an emphasis on those by new investigators, postdoctoral scientists and graduate students.

#### **Conference Budget**

Funding provided by the Agency supported partial registration and/or travel for 2 postdocs, 1 graduate student, 1 professor, 7 associate professor, 8 assistant professors and 1 research scientist at the GRC and partial travel support for 8 graduate students and 5 postdocs at the GRS.

#### **Conference Feedback**

Participants had an opportunity to provide feedback at the end of the Conference. The feedback collected from the meeting was extremely positive. Evaluations included numerous positive remarks regarding the selection of talks, amount of unpublished work presented and the opportunity for networking. Evaluations from the GRS included positive comments regarding the career panel, diversity of topics and the keynote talk.

GRC would like to thank the Army Research Office for its continued support of the meetings. The contributions received have been critical to the success of the conferences and are having a measurable impact in advancing the frontiers of science worldwide.

Dr. Petra Levin, GRC Chair  
Washington University

Dr. William Navarre, GRC Co-Chair  
University of Toronto

Dr. Saumya Gopalkrishnan, GRS Chair  
University of Wisconsin-Madison

Dr. Emily Crispell, GRS Co-Chair  
Emory University

Dr. Nancy Ryan Gray  
President and Chief Executive Officer  
Gordon Research Conferences

**Microbial Stress Response**  
Gordon Research Conference  
**Microbial Control of Homeostasis in Extreme, Hostile, and Unpredictable Environments**

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July 15 - 20, 2018

Chairs Petra Levin and William W. Navarre

Vice Chairs Michael Laub and Jade Wang

**Conference Program**

**Sunday**

- 2:00 pm - 9:00 pm      Arrival and Check-in
- 6:00 pm - 7:00 pm      Dinner
- 7:30 pm - 7:40 pm      Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
- 7:40 pm - 9:30 pm      Keynote Session: Bacteriophage Related Stress: Killers or Masterminds?  
Discussion Leader: **Daniel Haeusser** (Canisius College, USA)
- 7:40 pm - 8:20 pm      **Ry Young** (Texas A&M University, USA)  
"Phage Lysis: The Timing of Acute Stresses on the Cell Envelope"
- 8:20 pm - 8:30 pm      Discussion
- 8:30 pm - 8:50 pm      **Karen Maxwell** (University of Toronto, Canada)  
"*Streptomyces* Secondary Metabolites as an Anti-Phage Defense System"
- 8:50 pm - 9:00 pm      Discussion
- 9:00 pm - 9:20 pm      **Blake Wiedenheft** (Montana State University, USA)  
"Evolutionary Outcomes of CRISPR-Anti-CRISPR Conflict"
- 9:20 pm - 9:30 pm      Discussion

**Monday**

- 7:30 am - 8:30 am      Breakfast
- 8:30 am - 9:00 am      Group Photo
- 9:00 am - 12:30 pm      Stress and the Cell Envelope  
Discussion Leader: **Natividad Ruiz** (Ohio State University, USA)
- 9:00 am - 9:25 am      **Angelika Grundling** (Imperial College London, United Kingdom)  
"Osmotic Stress and Its Impact on the Staphylococcal Cell Envelope"
- 9:25 am - 9:35 am      Discussion
- 9:35 am - 10:00 am      **Gemma Reguera** (Michigan State University, USA)  
"Wiring the Cell Envelope to Metals"
- 10:00 am - 10:10 am      Discussion
- 10:10 am - 10:20 am      **Angela Mitchell** (Princeton University, USA)  
"What Does Enterobacterial Common Antigen Do? A Phenotype for Cyclic ECA"
- 10:20 am - 10:25 am      Discussion
- 10:25 am - 10:50 am      Coffee Break
- 10:50 am - 11:15 am      **Kevin Young** (University of Arkansas for Medical Sciences, USA)  
"Competition for Polyisoprenoids During Cell Wall Synthesis in *E. coli*"
- 11:15 am - 11:25 am      Discussion

11:25 am - 11:50 am **Dennis Claessen** (Leiden University, The Netherlands)  
"Stress-Induced Release of Cell Wall-Deficient Cells in Filamentous Actinomycetes"

11:50 am - 12:00 pm Discussion

12:00 pm - 12:10 pm **Michael Guzman** (Washington University in St. Louis, USA)  
"RuBisCO and Redox Stress in Bacteria"

12:10 pm - 12:15 pm Discussion

12:15 pm - 12:25 pm **Jennifer Herman** (Texas A&M University, USA)  
"Mbl-Dependent Localization of a Stationary Phase Enzyme"

12:25 pm - 12:30 pm Discussion

12:30 pm - 1:30 pm Lunch

1:30 pm - 4:00 pm Free Time

4:00 pm - 6:00 pm Poster Session

6:00 pm - 7:00 pm Dinner

7:30 pm - 9:30 pm Microbial Survival in Host and Non-Host Environments  
Discussion Leader: **Amy Schmid** (Duke University, USA)

7:30 pm - 7:55 pm **Christopher Yost** (University of Regina, Canada)  
"Using Functional Genomics to Study *Rhizobium leguminosarum* Fitness During Colonization of a Germinating Host Plant Seed"

7:55 pm - 8:05 pm Discussion

8:05 pm - 8:30 pm **Barbara Kunkel** (Washington University in St. Louis, USA)  
"Auxin Synthesis by *P. syringae* DC3000 Contributes to Pathogenesis on *Arabidopsis*"

8:30 pm - 8:40 pm Discussion

8:40 pm - 9:05 pm **Kornelia Smalla** (Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen, Germany)  
"Plasmid Mediated Adaptation of Soil Bacteria to Stress"

9:05 pm - 9:15 pm Discussion

9:15 pm - 9:30 pm General Discussion

**Tuesday**

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm Stress and Metabolism  
Discussion Leader: **Daniel Stoebe** (Harvey Mudd College, USA)

9:00 am - 9:25 am **Kim Lewis** (Northeastern University, USA)  
"Deterministic and Stochastic Mechanisms for Producing Persister Cells"

9:25 am - 9:35 am Discussion

9:35 am - 10:00 am **John Kirby** (Medical College of Wisconsin, USA)  
"Xenobiotic Disruption of Host Metabolism via Gut Bacteria and Phages"

10:00 am - 10:10 am Discussion

10:10 am - 10:20 am **Christina Savage** (University of Kentucky, USA)  
"How Did I Get Here, and Where Am I Going? The Tale of a Bacterium Trying to Survive"

10:20 am - 10:25 am Discussion

10:25 am - 10:50 am Coffee Break

10:50 am - 11:15 am **Anthony Richardson** (University of Pittsburgh, USA)  
 "The Metabolic Adaptations of *Staphylococcus aureus* to Host Immune Radicals"

11:15 am - 11:25 am Discussion

11:25 am - 11:50 am **Gilles van Wezel** (Leiden University, The Netherlands)  
 "The Deadly Lure of the Soil: Characterization and Mode of Action of Volatile Antibiotic Compounds"

11:50 am - 12:00 pm Discussion

12:00 pm - 12:10 pm **Maryam Khademian** (University of Illinois at Urbana-Champaign, USA)  
 "The Cytochrome c Peroxidase Allows *Escherichia coli* to Exploit Environmental H<sub>2</sub>O<sub>2</sub> as a Terminal Oxidant for Anaerobic Respiration"

12:10 pm - 12:15 pm Discussion

12:15 pm - 12:25 pm **Stavroula Hatzios** (Yale University, USA)  
 "Chemically Dissecting Oxidative Crosstalk at the Host-Microbe Interface"

12:25 pm - 12:30 pm Discussion

12:30 pm - 1:30 pm Lunch

1:30 pm - 4:00 pm Free Time

4:00 pm - 6:00 pm Poster Session

6:00 pm - 7:00 pm Dinner

7:30 pm - 9:30 pm Antimicrobial Stress  
 Discussion Leader: **Joan Slonczewski** (Kenyon College, USA)

7:30 pm - 7:55 pm **Michael Baym** (Harvard Medical School, USA)  
 "Antibiotic Resistance Evolution"

7:55 pm - 8:05 pm Discussion

8:05 pm - 8:30 pm **Elizabeth Harry** (ithree institute, University of Technology Sydney, Australia)  
 "Antibiotics from Nature"

8:30 pm - 8:40 pm Discussion

8:40 pm - 8:50 pm **Dao Nguyen** (McGill University, Canada)  
 "Membrane Permeability and Cyclopropane Fatty Acids in Stringent Response Mediated Multidrug Tolerance in *Pseudomonas aeruginosa*"

8:50 pm - 8:55 pm Discussion

8:55 pm - 9:20 pm **Eduardo Groisman** (Yale School of Medicine, USA)  
 "Stress-Specific Responses Mediating Antimicrobial Resistance"

9:20 pm - 9:30 pm Discussion

**Wednesday**

7:30 am - 8:30 am Breakfast

9:00 am - 12:30 pm Intermicrobial Interactions: The Stress of Living Together  
 Discussion Leader: **Steven Finkel** (University of Southern California, USA)

9:00 am - 9:25 am **John Whitney** (McMaster University, Canada)  
 "Stress Caused by Antagonistic Neighbours"

9:25 am - 9:35 am Discussion

9:35 am - 10:00 am **Jie Xiao** (The Johns Hopkins University School of Medicine, USA)



	"New Cell Fate Potentials and Switching Kinetics Uncovered from the Classic Lambda Phage Genetic Circuit"
10:00 am - 10:10 am	Discussion
10:10 am - 10:20 am	<b>Kristina Jonas</b> (Stockholm University, Sweden) "An Essential Regulatory Function of the DnaK Chaperone Dictates the Decision Between Proliferation and Maintenance in <i>Caulobacter crescentus</i> "
10:20 am - 10:25 am	Discussion
10:25 am - 10:50 am	Coffee Break
10:50 am - 11:15 am	<b>Carl Johnson</b> (Vanderbilt University, USA) "Circadian Rhythms in Bacteria: Evolution and Mechanism"
11:15 am - 11:25 am	Discussion
11:25 am - 11:35 am	<b>Yael Litvak</b> (University of California, Davis, USA) "Shiga Toxin-Mediated Bacterial Growth in the Gut"
11:35 am - 11:40 am	Discussion
11:40 am - 11:50 am	<b>Ivan Matic</b> (INSERM U1001 / Universite Paris Descartes, France) "Impact of the <i>Escherichia coli</i> Ribosomal RNA Operon Copy Number Variations on Genome Stability"
11:50 am - 11:55 am	Discussion
11:55 am - 12:05 pm	<b>Kevin Lang</b> (University of Washington, USA) "Gene Orientation-Specific R-Loop Formation Orchestrates Bacterial Stress Survival and Pathogenesis"
12:05 pm - 12:10 pm	Discussion
12:10 pm - 12:20 pm	<b>Gleb Pishchany</b> (Harvard Medical School, USA) "Amycomycin: An Antibiotic that Isn't"
12:20 pm - 12:25 pm	Discussion
12:25 pm - 12:30 pm	General Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:00 pm - 7:30 pm	Business Meeting <i>Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair</i>
7:30 pm - 9:30 pm	Symbiosis: A Community Approach to Dealing with Stress Discussion Leader: <b>Paul Price</b> (Eastern Michigan University, USA)
7:30 pm - 7:55 pm	<b>Joel Griffitts</b> (Brigham Young University, USA) "The Illusion of Cooperation in the Legume- <i>Rhizobium</i> Symbiosis"
7:55 pm - 8:05 pm	Discussion
8:05 pm - 8:30 pm	<b>Aniek Ivens</b> (Vrije Universiteit Amsterdam, The Netherlands) "Knowing What to Expect: Reducing Stress by Partner Specificity in an Ant-Trophobiont-Microbe Symbiosis"

8:30 pm - 8:40 pm	Discussion
8:40 pm - 9:05 pm	<b>Silvia Bulgheresi</b> (University of Vienna, Austria) "Together We Stand: The Extreme Life of Marine Nematode Symbionts"
9:05 pm - 9:15 pm	Discussion
9:15 pm - 9:25 pm	<b>Michael Gray</b> (University of Alabama at Birmingham, USA) "Stringent Alleles of RNA Polymerase Inhibit Inorganic Polyphosphate Synthesis"
9:25 pm - 9:30 pm	Discussion
<b>Thursday</b>	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	Developmental Responses to Stress Discussion Leader: <b>Jade Wang</b> (University of Wisconsin-Madison, USA)
9:00 am - 9:25 am	<b>Pamela Brown</b> (University of Missouri, USA) "Morphological Changes Induced by Cell Division Blocks in <i>Agrobacterium tumefaciens</i> "
9:25 am - 9:35 am	Discussion
9:35 am - 10:00 am	<b>Amy Gehring</b> (Williams College, USA) "Role of a Phosphodiesterase in the Secondary Metabolism of <i>Streptomyces coelicolor</i> "
10:00 am - 10:10 am	Discussion
10:10 am - 10:20 am	<b>Scarlet Shell</b> (Worcester Polytechnic Institute, USA) "Mechanisms of mRNA Stabilization in Growth-Arrested Mycobacteria"
10:20 am - 10:25 am	Discussion
10:25 am - 10:50 am	Coffee Break
10:50 am - 11:15 am	<b>Kumaran Ramamurthi</b> (National Cancer Institute, NIH, USA) "Quality Control Pathways that Govern Progression Through Sporulation"
11:15 am - 11:25 am	Discussion
11:25 am - 11:50 am	<b>Marie Elliot</b> (McMaster University, Canada) " <i>Streptomyces</i> Exploration: New Tricks from an Old Microbe"
11:50 am - 12:00 pm	Discussion
12:00 pm - 12:20 pm	<b>Amy Camp</b> (Mount Holyoke College, USA) "A Role for the ClpCP Protease in Directed Metabolic Shutdown of the Developing <i>Bacillus subtilis</i> Spore"
12:20 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	Poster Session
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	Using "Big Data" to Understand Microbial Stress Response Discussion Leader: <b>Michael Ibba</b> (The Ohio State University, USA)
7:30 pm - 7:55 pm	<b>Jay Hinton</b> (Institute of Integrative Biology, University of Liverpool, United Kingdom) "Using Multi-Omics to Identify a Single SNP that Controls Serum Resistance of <i>Salmonella</i> "
7:55 pm - 8:05 pm	Discussion
8:05 pm - 8:30 pm	<b>Paul Wiggins</b> (University of Washington, USA)

"Physics, Bioengineering and Microbiology"

8:30 pm - 8:40 pm Discussion

8:40 pm - 8:50 pm **Michael Patnode** (Washington University in St. Louis, USA)

"Selective Expansion of Targeted Human Gut Microbes *In Vivo* Using Plant Polysaccharides Mined from Waste Streams of Food Production"

8:50 pm - 8:55 pm Discussion

8:55 pm - 9:20 pm **Kerwyn Huang** (Stanford University, USA)

"Integrating Stress Responses with Morphogenesis"

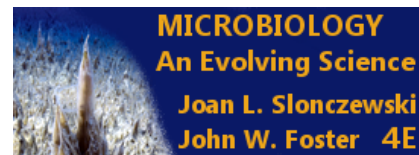
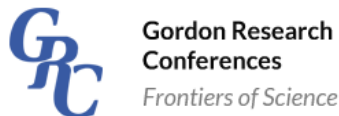
9:20 pm - 9:30 pm Discussion

**Friday**

7:30 am - 8:30 am Breakfast

9:00 am Departure

Contributors



## Microbial Stress Response GRC Registration List

Name	Organization	Participation
Ahmad, Shehryar	McMaster University	Poster Presenter
Al-Tameemi, Hassan	Dept. of Biochemistry and Microbiology	Poster Presenter
Anderson, Brent	University of Wisconsin-Madison	Poster Presenter
Ansari, Shirin	ithree Institute, University of Technology, Sydney	Poster Presenter
Aranda-Diaz, Andres	Stanford University	Poster Presenter
Arjes, Heidi	Stanford University	Poster Presenter
Aussel, Laurent	Aix-Marseille Université	Poster Presenter
Babin, Brett M	Stanford School of Medicine	Poster Presenter
Balasubramanian, A	National Cancer Institute, National Institute of Health	Poster Presenter
Bark, Steven J	University of Houston	Poster Presenter
Basta, David	California Institute of Technology	Poster Presenter
Baym, Michael	Harvard Medical School	Speaker
Beavers, William N	Vanderbilt University Medical Center	Poster Presenter
Berry, Katherine E	Mount Holyoke College	Poster Presenter
Bhatt, Shantanu	Saint Joseph's University	Poster Presenter
Bischofs, Ilka B	MPI for Terrestrial Microbiology	Poster Presenter
Bittner, Alycia	Addgene	Attendee
Bonilla, Carla Y.	Gonzaga University	Poster Presenter
Bottomley, Amy L	University of Technology Sydney	Poster Presenter
Bourne, Christina	University of Oklahoma	Poster Presenter
Bouzo, Daniel	ithree Institute, University of Technology Sydney	Poster Presenter
Brown, Pamela Jb	University of Missouri	Speaker
Buchholz, Kerry	Genentech	Attendee
Bulgheresi, Silvia	University of Vienna	Speaker
Burton, Aisha T	Indiana University	Poster Presenter
Camp, Amy	Mount Holyoke College	Speaker
Carfrae, Lindsey A	McMaster University	Poster Presenter
Charoenlap, Nisanart	Chulabhorn Research Institute	Poster Presenter
Chien, Peter	UMass Amherst	Poster Presenter
Cho, You-Hee	CHA University	Poster Presenter
Choby, Jacob	Vanderbilt University School of Medicine	Poster Presenter
Choi, Jeongjoon	Yale University / Associate Research Scientist	Poster Presenter
Chung, In-Young	CHA university	Poster Presenter
Claessen, Dennis	Leiden University	Speaker
Cokcetin, Nural	ithree institute, University of Technology Sydney	Poster Presenter
Collins, Marisha	Tufts Sackler School of Biomedical Sciences	Poster Presenter
Craver, Vinka	Civil and Environmental Engineering - University of Rhode Island	Attendee
Dahl, Jan-Ulrik	University of Michigan	Poster Presenter
Davidson, Alan R	University of Toronto	Poster Presenter
De Silva, P. Malaka P	University of Manitoba	Poster Presenter
Deaconescu, Alexandra	Brown University	Poster Presenter
Dekoninck, Kilian	de Duve Institute (UCLouvain)	Poster Presenter
Doerr, Tobias	Cornell University	Poster Presenter

Dunlop, Mary J	Boston University	Attendee
Dwyer, Daniel J	University of Maryland, College Park	Poster Presenter
Eguchi, Yoko	Kindai University, Faculty of Biology-Oriented Science and Technology	Poster Presenter
El Rayes, Jessica	Universite Catholique de Louvain	Poster Presenter
El Zahed, Sara	McMaster University	Poster Presenter
Elliot, Marie	McMaster University	Speaker
Ellis, Michael J	McMaster University	Poster Presenter
Espeli, Olivier	College de France - CIRB	Poster Presenter
Eswara, Prahathees J.	University of South Florida	Poster Presenter
Fernandez, Nicolas L	Michigan State University	Poster Presenter
Finkel, Steven	University of Southern California	Discussion Leader
Friedberg, Deborah	The Hebrew University, The Institute of Medical Research	Attendee
Frisch, Ryan L	DuPont Industrial Biosciences	Attendee
Gallagher, Kelley A	John Innes Centre	Poster Presenter
Gao, Xiaohui	Yale School of Medicine	Poster Presenter
Gehring, Amy M	Williams College	Speaker
Gibbons, Henry S.	US Army Edgewood Chemical Biological Center	Poster Presenter
Gopalkrishnan, Saumya	University of Wisconsin-Madison	Poster Presenter
Gottesman, Susan	National Cancer Institute	Poster Presenter
Grabowicz, Marcin	Emory University	Poster Presenter
Gray, Michael J	University of Alabama at Birmingham	Speaker
Gregory, Gwendolyn	University of Delaware	Poster Presenter
Griffitts, Joel S	Brigham Young University	Speaker
Groisman, Eduardo A	Yale School of Medicine	Speaker
Grundling, Angelika	Imperial College London	Speaker
Guzman, Michael S	Washington University in St. Louis	Speaker
Haeusser, Daniel P	Canisius College	Discussion Leader
Harry, Elizabeth	ithree institute, University of Technology Sydney	Speaker
Hart, Elizabeth M	Princeton University	Poster Presenter
Hatzios, Stavroula K	Yale University	Speaker
Henderson, Lory O	Cornell University	Poster Presenter
Herman, Jennifer K	Texas A&M University	Speaker
Hinton, Jay C.D.	Institute of Integrative Biology, University of Liverpool	Speaker
Huang, Kerwyn Casey	Stanford University	Speaker
Huang, Charlie	UC Berkeley	Poster Presenter
Hummels, Katherine R	Indiana University	Poster Presenter
Hünnefeld, Max	Forschungszentrum Jülich	Poster Presenter
Ibba, Michael	The Ohio State University	Discussion Leader
Ivens, Aniek B.F.	Vrije Universiteit Amsterdam	Speaker
Jang, Hye-Jeong	Laboratory of Bioantibacterials, College of Pharmacy CHA University	Poster Presenter
Johnson, Carl H	Vanderbilt University	Speaker
Jonas, Kristina	Stockholm University	Speaker
Ke, Na	New England Biolabs	Poster Presenter
Kearns, Daniel B	Indiana University	Poster Presenter
Keiler, Kenneth C	Pennsylvania State University	Poster Presenter

Kelliher, Jessica L	University of Illinois at Urbana-Champaign	Poster Presenter
Khademian, Maryam	University of Illinois at Urbana-Champaign	Speaker
Kirby, John R.	Medical College of Wisconsin	Speaker
Koh, Alan	University of Bath	Poster Presenter
Kokoska, Robert J	US Army Research Office	Attendee
Kram, Karin E	California State University Dominguez Hills	Poster Presenter
Kumari, Jyoti	ANNA University	Poster Presenter
Kunkel, Barbara N	Washington University in St. Louis	Speaker
Lang, Kevin S	University of Washington	Speaker
Lang, Claus	DuPont Industrial Biosciences	Attendee
Laub, Michael	Massachusetts Institute of Technology / Howard Hughes Medical Institute	Vice Chair
Lee, Young-Joon	CHA University	Poster Presenter
Lee, Eunjin	Kyung Hee University	Poster Presenter
Leslie, David J	Stockholm University	Poster Presenter
Levin, Petra	Washington University in St. Louis	Chair
Levy, Haim	Israel Institute for Biological Research	Attendee
Lewis, Kim	Northeastern University	Speaker
Liao, Yi	University of Chicago	Poster Presenter
Lijek, Rebecca S.	Mount Holyoke College	Poster Presenter
Litvak, Yael	University of California, Davis	Speaker
Martini, Maria Carla	Worcester Polytechnic Institute	Poster Presenter
Matic, Ivan	INSERM U1001 / Universite Paris Descartes	Speaker
Maxwell, Karen	University of Toronto	Speaker
Meirelles, Lucas A	California Institute of Technology	Poster Presenter
Merrikh, Houra	University of Washington	Poster Presenter
Mitchell, Stephanie	University of Minnesota	Poster Presenter
Mitchell, Angela M	Princeton University	Speaker
Mongkolsuk, Skorn	Chulabhorn Research Institute, Lab of Biotechnology	Attendee
Murphy, Shannon G	Cornell University	Poster Presenter
Navarre, William W	University of Toronto	Chair
Ng, Wai-Leung	Tufts University School of Medicine	Poster Presenter
Nguyen, Jen	MIT / ETH Zürich	Poster Presenter
Nguyen, Dao	McGill University	Speaker
Nye, Taylor	University of Michigan MCDB	Poster Presenter
Oliveira, Rute	IBMC, i3S	Poster Presenter
Orr, Mona W	National Institutes of Health	Poster Presenter
Ostaszewski, A	University of Calgary	Poster Presenter
Ouellette, Scot	University of Nebraska Medical Center	Poster Presenter
Pandey, Shanti	University of Southern Mississippi	Poster Presenter
Parraga Solorzano, P	University of Illinois at Urbana Champaign	Poster Presenter
Patel, Yesha S	Indian Institute of Technology Bombay	Poster Presenter
Patnode, Michael L	Washington University in St. Louis	Speaker
Peterson, Celeste N	Suffolk University	Poster Presenter
Pfiffer, Vanessa	Humboldt Universität zu Berlin	Poster Presenter
Pileggi, Marcos	Universidade Estadual de Ponta Grossa	Poster Presenter
Pishchany, Gleb	Harvard Medical School	Speaker

Poncin, Katy	University of Namur	Poster Presenter
Price, Paul A.	Eastern Michigan University	Discussion Leader
Purdy, Alexandra E	Amherst College	Poster Presenter
Radwan, Golestan S	Royal Holloway University of London	Poster Presenter
Rajendram, Manohary	Stanford University	Poster Presenter
Ramachandran, R	National Institutes of Health	Poster Presenter
Ramamurthi, Kumaran	National Cancer Institute, NIH	Speaker
Reguera, Gemma	Michigan State University	Speaker
Richardson, Anthony	University of Pittsburgh	Speaker
Ruiz, Natividad	Ohio State University	Discussion Leader
Rutherford, Steven T	Genentech	Poster Presenter
Savage, Christina R	University of Kentucky	Speaker
Schmid, Amy K	Duke University	Discussion Leader
Schramm, Frederic D	Stockholm University	Poster Presenter
Shell, Scarlet S	Worcester Polytechnic Institute	Speaker
Shi, Handuo	Stanford University	Poster Presenter
Shull, Lauren	Tufts University	Poster Presenter
Siegele, Deborah A	Texas A&M University	Poster Presenter
Simmons, Lyle A	University of Michigan	Poster Presenter
Slonczewski, Joan L	Kenyon College	Discussion Leader
Smalla, Kornelia	Julius Kühn-Institut - Bundesforschungsinstitut für Kulturpflanzen	Speaker
Stabryla, Lisa M	University of Pittsburgh	Poster Presenter
Stevenson, Brian	University of Kentucky	Poster Presenter
Stoebel, Daniel M	Harvey Mudd College	Discussion Leader
Storz, Gisela	National Institute of Child Health and Human Development, NIH	Poster Presenter
Teitzel, Gail M	Trends in Microbiology	Attendee
Thompson, Melene	Indiana University	Poster Presenter
Tidhar, Avital	Israel Institute for Biological Research	Attendee
Todor, Horia	University of California, San Francisco	Poster Presenter
Vadia, Stephen E	Washington University	Poster Presenter
Van der Henst, M	University of Namur UNamur	Poster Presenter
van Wezel, Gilles P.	Leiden University	Speaker
Vasquez, Kimberly S	Stanford University	Poster Presenter
Vieira, Filipe	Instituto Gulbenkian de Ciência	Poster Presenter
Vultaggio, Janelle	Harvard Medical School	Poster Presenter
Wang, Boyuan	Massachusetts Institute of Technology	Poster Presenter
Westfall, Corey S	Washington University in St. Louis	Poster Presenter
White-Ziegler, Ch	Smith College	Poster Presenter
Whitney, John	McMaster University	Speaker
Wiedenheft, Blake	Montana State University	Speaker
Wiggins, Paul A	University of Washington	Speaker
Williams, Michelle A	University of Missouri	Poster Presenter
Woodruff, Peter	University of Southern Maine	Poster Presenter
Xia, Tingying	The University of Hong Kong	Poster Presenter
Xiao, Jie	The Johns Hopkins University School of Medicine	Speaker
Yan, Jinyuan	Memorial Sloan Kettering Cancer Center	Poster Presenter

Yang, Jason H	Massachusetts Institute of Technology / Broad Institute	Poster Presenter
Yannarell, Sarah M	University of North Carolina at Chapel Hill	Poster Presenter
Yap, Mee-Ngan F	Saint Louis University/ Biochemistry & Molecular Biology	Poster Presenter
Yin, Liang	University of Washington	Poster Presenter
Yost, Christopher	University of Regina	Speaker
Young, Ry	Texas A&M University	Speaker
Young, Kevin D	University of Arkansas for Medical Sciences	Speaker
Zambri, Matt	McMaster University	Poster Presenter
Zehentner, Barbara	Technical University of Munich	Poster Presenter
Zhang, Manjing	University of Chicago	Poster Presenter
Zhou, Ying	Worcester Polytechnic Institute	Poster Presenter
Zhou, Yidan	University of Illinois at Urbana-Champaign	Poster Presenter



## Microbial Stress Response (GRS)

Gordon Research Seminar

### Bacterial Adaptation in Response to Fluctuating Environments

July 14 - 15, 2018

Chairs Saumya Gopalkrishnan and Emily K. Crispell

#### Conference Program

##### Saturday

- |                   |  |
|-------------------|--|
| 2:00 pm - 5:00 pm | Arrival and Check-in   |
| 3:30 pm - 3:45 pm | Introductory Comments by GRC Site Staff / Welcome from the GRS Chair   |
| 3:45 pm - 4:30 pm | Keynote Session: The Genes that Were Missed: Intricate Regulation Provided by Small RNAs and Small Proteins<br>Discussion Leader: <b>Heidi Arjes</b> (Stanford University, USA)                                |
| 3:45 pm - 4:15 pm | <b>Gisela Storz</b> (National Institute of Child Health and Human Development, NIH, USA)<br>"The Genes that Were Missed: Intricate Regulation Provided by Small RNAs and Small Proteins"                       |
| 4:15 pm - 4:30 pm | Discussion   |
| 4:30 pm - 6:00 pm | Poster Session   |
| 6:00 pm - 7:00 pm | Dinner   |
| 7:30 pm - 9:30 pm | All Things Considered: A Global View on How Extracellular Environments and Population Interactions Shape Bacterial Stress Responses<br>Discussion Leader: <b>Manohary Rajendram</b> (Stanford University, USA) |
| 7:30 pm - 7:50 pm | <b>Andres Aranda-Diaz</b> (Stanford University, USA)<br>"Interspecies Interactions Modulate Antibiotic Tolerance in the Fruit Fly Gut Microbiome"  |
| 7:50 pm - 8:00 pm | Discussion   |
| 8:00 pm - 8:20 pm | <b>Sarah Yannarell</b> (University of North Carolina at Chapel Hill, USA)<br>"The Physical and Genetic Basis of a Mixed-Species Biofilm Structure"   |
| 8:20 pm - 8:30 pm | Discussion   |
| 8:30 pm - 8:50 pm | <b>Yi Liao</b> (University of Chicago, USA)<br>"The Min Oscillator Programs Asymmetric Cell Divisions During Stress Recovery"  |
| 8:50 pm - 9:00 pm | Discussion   |
| 9:00 pm - 9:20 pm | <b>Jacob Choby</b> (Vanderbilt University School of Medicine, USA)<br>" <i>Staphylococcus aureus</i> HemX Regulates Heme Biosynthesis to Prevent Endogenous Activation of the Heme Stress Response"            |
| 9:20 pm - 9:30 pm | Discussion   |

##### Sunday

- |                    |  |
|--------------------|--|
| 7:30 am - 8:30 am  | Breakfast  |
| 9:00 am - 11:00 am | Small Things Considered: A Focused View of How Molecular Interactions Shape the Bacterial Stress Response<br>Discussion Leader: <b>Michael Patnode</b> (Washington University in St. Louis, USA) |
| 9:00 am - 9:20 am  | <b>Jessica El Rayes</b> (Universite Catholique de Louvain, Belgium)<br>"Revisiting Lipoprotein Sorting in Gram Negative Bacteria: Disorder Also Matters"   |
| 9:20 am - 9:30 am  | Discussion   |

9:30 am - 9:50 am	<b>Brent Anderson</b> (University of Wisconsin-Madison, USA) "Conserved (p)ppGpp Inhibition and Oligomeric Regulation of the Purine Salvage Enzyme HPRT"
9:50 am - 10:00 am	Discussion
10:00 am - 10:20 am	<b>Aisha Burton</b> (Indiana University, USA) "Transcriptional Activation and Mechanism of a Plasmid Encoded Sigma Factor in <i>Bacillus subtilis</i> "
10:20 am - 10:30 am	Discussion
10:30 am - 10:50 am	<b>Amy Bottomley</b> (University of Technology Sydney, Australia) "We Are What We Eat: Identifying a Regulatory Crosstalk Between Central Carbon Metabolism and Cell Division in Bacteria"
10:50 am - 11:00 am	Discussion
11:00 am - 12:30 pm	Poster Session <i>Coffee will be served in the poster area from 11:00 am - 11:30 am</i>
12:30 pm - 1:30 pm	Lunch
1:30 pm - 2:30 pm	Mentorship Component: Career Panel Discussion Leader: <b>Saumya Gopalkrishnan</b> (University of Wisconsin-Madison, USA)
1:30 pm - 2:30 pm	<b>Panel Discussion</b> <i>Careers in Science</i> <ul style="list-style-type: none"> <li>• <b>Ryan Frisch</b> (DuPont Industrial Biosciences, USA)</li> <li>• <b>Celeste Peterson</b> (Suffolk University, USA)</li> <li>• <b>Steven Rutherford</b> (Genentech, USA)</li> <li>• <b>Gisela Storz</b> (National Institute of Child Health and Human Development, NIH, USA)</li> </ul>
2:30 pm - 3:00 pm	Evaluation Period <i>Fill in GRS Evaluation Forms</i>
3:00 pm	Seminar Concludes

#### Contributors



**Microbial Stress Response GRS Registration List**

<b>Name</b>	<b>Organization</b>	<b>Participation</b>
Ahmad, Shehryar	McMaster University	Poster Presenter
Anderson, Brent	University of Wisconsin-Madison	Speaker
Ansari, Shirin	ithree Institute, University of Technology, Sydney	Poster Presenter
Aranda-Diaz, Andres	Stanford University	Speaker
Arjes, Heidi	Stanford University	Discussion Leader
Basta, David	California Institute of Technology	Poster Presenter
Beavers, William N	Vanderbilt University Medical Center	Poster Presenter
Bhatt, Shantanu	Saint Joseph's University	Poster Presenter
Bottomley, Amy L	University of Technology Sydney	Speaker
Bouzo, Daniel	ithree Institute, University of Technology Sydney	Poster Presenter
Burton, Aisha T	Indiana University	Speaker
Carfrae, Lindsey A	McMaster University	Poster Presenter
Choby, Jacob	Vanderbilt University School of Medicine	Speaker
Cokcetin, Nural	ithree institute, University of Technology Sydney	Poster Presenter
Dahl, Jan-Ulrik	University of Michigan	Poster Presenter
De Silva, P. Malaka P	University of Manitoba	Poster Presenter
Dekoninck, Kilian	de Duve Institute (UCLouvain)	Poster Presenter
El Rayes, Jessica	Universite Catholique de Louvain	Speaker
El Zahed, Sara	McMaster University	Poster Presenter
Fernandez, Nicolas L	Michigan State University	Poster Presenter
Frisch, Ryan L	DuPont Industrial Biosciences	Speaker
Gallagher, Kelley A	John Innes Centre	Poster Presenter
Gao, Xiaohui	Yale School of Medicine	Poster Presenter
Gopalkrishnan, Saumya	University of Wisconsin-Madison	Chair
Gregory, Gwendolyn	University of Delaware	Poster Presenter
Guzman, Michael S	Washington University in St. Louis	Poster Presenter
Hart, Elizabeth M	Princeton University	Poster Presenter
Hummels, Katherine R	Indiana University	Poster Presenter
Kelliher, Jessica L	University of Illinois at Urbana-Champaign	Poster Presenter
Khademian, Maryam	University of Illinois at Urbana-Champaign	Poster Presenter
Kumari, Jyoti	ANNA University	Poster Presenter
Liao, Yi	University of Chicago	Speaker
Meirelles, Lucas A	California Institute of Technology	Poster Presenter
Murphy, Shannon G	Cornell University	Poster Presenter
Nguyen, Jen	MIT / ETH Zürich	Poster Presenter
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Rutherford, Steven T	Genentech	Speaker

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Van der Henst, Mathilde	University of Namur UNamur	Poster Presenter
Vasquez, Kimberly S	Stanford University	Poster Presenter
Williams, Michelle A	University of Missouri	Poster Presenter
Yannarell, Sarah M	University of North Carolina at Chapel Hill	Speaker
Yin, Liang	University of Washington	Poster Presenter
Zambri, Matt	McMaster University	Poster Presenter
Zehentner, Barbara	Technical University of Munich	Poster Presenter
Zhang, Manjing	University of Chicago	Poster Presenter
Zhou, Ying	Worcester Polytechnic Institute	Poster Presenter